UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,269	01/14/2004	Jimmie Earl DeWitt JR.	AUS920030549US1	4136

35525 7590 05/05/2006

IBM CORP (YA)
C/O YEE & ASSOCIATES PC
P.O. BOX 802333
DALLAS, TX 75380

EXAMINER	
LAI, VINCENT	
ART UNIT	**PAPER NUMBER**
2181	

DATE MAILED: 05/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/757,269	DEWITT ET AL.	
	Examiner	Art Unit	
	Vincent Lai	2181	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

FRITZ FLEMING
PRIMARY EXAMINER
GROUP 2100
AU 2181

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/14/04 & 7/1/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on 1/14/2004 and 7/1/2005 was considered by the examiner.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Element 260 of figure 2. It is also of note that due to the number of figures not all of the elements of the figures have been checked to see if they are mentioned in the description and the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the drawings. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and

informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities:

The cross-reference to related applications section of the specification is incomplete.

Appropriate correction is required.

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

5. Claims 15-26, and 29 are objected to because of the following informalities:

Claim 15 recites the "first instructions for responsive to receiving an instruction" which is grammatically incorrect. It is suggested to be changed to and assumed to read "first instructions responsive to receiving an instruction."

Claims 16-26 are objected because of its dependencies on claim 15.

Claim 29 has an extra comma after paragraph 2 of the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear as to whether an apparatus or a method is being claim as both are being claimed in the preamble of the claim.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

FNF 5/1/2006

7. Claims 3, 7, 17, and 21 and 15-28 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. There are no tangible end results

from implementing the claims in question because the end result is a determination or an identification, which both lack a tangible "real world" result. Although some claims do have intermediate steps that produce an intermediate tangible result, the end result still lacks tangibility.

Claims 15-28 are also directed to non-statutory subject matter because of an improper definition of acceptable computer readable media. Such forms of unacceptable computer readable media include the disclosed "radio frequency and light wave transmissions" detailed on page 126 in the submitted specification.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 1- 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burrows (U.S. Patent # 5,887,159), herein referred to as Burrows in view of Holmberg (U.S Patent # 6,233,679 B1), herein referred to as Holmberg.

As per claim 1, Burrows teaches a method in a data processing system for processing instructions, the method comprising:

responsive to receiving an instruction at a processor in the data processing system (See column 2, lines 49-59: Instructions are fetched, decoded and executed), determining whether an indicator is associated with the instruction (See column 2, lines 59-65: This is done by checking to see if hint information is null or not);

enabling counting, by the processor, of each first event associated with a primary metric of the execution (See column 5, lines 11-13: The metric given is the number of times an execution flow is encountered) of the instruction if the indicator is associated with the instruction (See figure 5 and column 5, lines 11-13: A count field is available for keeping track of the number of times a certain action occurs), wherein the processor autonomically increments the count of the first events associated with the primary metric of the execution of the instruction in a first hardware counter (A counter inherently is able to increment a count when certain operations occurs);

determining if the count of the first events associated with the primary metric of the execution of the instruction stored in the first hardware counter satisfies a predetermined relationship with a threshold value (See column 5, lines 14-17: Counts are tracked and used to update hint information);

Burrows does not teach a second counter.

Holmberg does teach a second counter (See figure 2) and enabling counting, by the processor, of each second event associated with a secondary metric of the execution of a portion of code associated with the instruction (See column 4, line 54-column 5, line 2: A second counter is available for counter a separate event), wherein the processor autonomically increments the count of the second events associated with

the secondary metric of the execution of a portion of code associated with the instruction in a second hardware counter (A counter inherently is able to increment a count when certain operations occurs).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. The performance indicator is another form of providing more data. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 2, Burrows discloses wherein the instruction is received in an instruction cache in the processor (See column 4, lines 3-5: An instruction cache is present).

As per claim 3, Burrows discloses wherein the indicator is stored in a performance instrumentation shadow cache (See figure 5: A hint prediction table is used to store information) and wherein the processor checks the performance instrumentation shadow cache to determine whether the indicator is associated with the instructions (See column 2, lines 59-65: This is done by checking to see if hint information is null or not).

As per claim 4, Burrows discloses wherein the instruction is received in a bundle by an instruction cache in the processor (See column 4, lines 3-5: An instruction cache block implies instructions are received in a bundle) and wherein the indicator comprises at least one spare bit in a field in the bundle (See figure 2: The figure shows an instruction with a hint field).

As per claim 5, Burrows discloses wherein the indicator is a separate instruction (See figures 2 and 5, and column 4 lines 18-25: The presence of a hint field changes how instructions are interpreted and thus can be treated as a separate instruction).

As per claim 6, Burrows discloses wherein the first events includes at least one of an entry into a module (See column 2, lines 53-54: All code is placed into object code modules), an exit from a module (The code must exit the module to be executed), an entry into a subroutine (See column 3, lines 38-40: Subroutines are used), an exit from a subroutine (Code must inherently exit subroutines at some point—either by natural degradation or interrupt), an entry into a function (See column 3, lines 41-42: Procedures are functions), an exit from a function (Code must inherently exit functions at some point—either by natural degradation or interrupt), a start of input/output (See column 3, lines 14-22: Data is read/passed along), a completion of input/output (This must stop before an instruction can be executed properly), and the execution of the instruction (All meaningful instructions inherently executed).

As per claim 7, Burrows discloses wherein determining whether an indicator is associated with the instruction comprises:

determining, by an instruction cache, whether the indicator is present in a field within the instruction (See column 2, lines 59-65: This is done by checking to see if hint information is null or not).

As per claim 8, Burrows teaches wherein the enabling the counting of first events includes sending a first signal to a performance monitor unit (See column 2, lines 62: A signal is sent to generate a monitor program), wherein the performance monitor unit counts each first event associated with execution of the instruction using the first hardware counter (See figure 5 and column 5, lines 11-13: Counters are used when a monitor program dictates so),

Burrows does not teach a second hardware counter.

Holmberg does teach a second counter (See figure 2) and enabling counting, by the processor, of each second event associated with a secondary metric of the execution of a portion of code associated with the instruction (See column 4, line 54-column 5, line 2: A second counter is available for counter a separate event), wherein the processor autonomically increments the count of the second events associated with the secondary metric of the execution of a portion of code associated with the instruction in a second hardware counter (A counter inherently is able to increment a count when certain operations occurs).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in the art that if a second counter were made available, then the use of the performance monitor unit on the second counter would mirror that of the first counter. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 9, Burrows teaches the use of a counter (See figure 5 and column 5, lines 11-13: A count field is available for keeping track of the number of times a certain action occurs).

Burrows does not teach a second counter and thus no combined counter value.

Holmberg does teach a second counter (See figure 2) and wherein the first hardware counter is a combined counter value hardware counter that stores a combined count from a plurality of other hardware counters (See column 4, line 64- column 5, line 2: One of the preferred modes of counting is a cumulative count).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in

the art that if a second counter were made available, then a cumulative counter would yield more data for better decisions to be made. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 10, Burrows teaches generating an interrupt (See column 5, lines 11-13: Intercepting an execution involves interrupting it) in response to a determination that the count of the first events meets or excess the threshold value; and

sending the interrupt to an interrupt handler of a performance monitoring application (See column 5, lines 11-13: This has to be inherently done with a interception else nothing would happen);

wherein the interrupt handler of the performance monitoring application initiates counting of each event associated with a metric of the execution of a portion of code associated with the instruction (See figure 5 and column 5, lines 11-13: Counters are used when a monitor program dictates so).

Burrows does not teach a second counter thus no secondary metric, or counting of a second event.

Holmberg does teach wherein enabling counting, by the processor, of each second event associated with a secondary metric (See column 5, lines 35-44: Several metrics are listed) of the execution of a portion of code associated with the instruction includes.

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing

a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in the art that if a second counter were made available, the ability to use a secondary metric would be made available with a second counter. It also of note that one of the references cited in Holmberg is Burrows.

As per claim 11, Burrows discloses wherein the interrupt handler instruments other instructions in the portion of code associated with the instruction to include the indicator (See column 2, lines 59-65 and column 5, lines 11-13: An indicator is used by the monitor program to identify related code).

As per claim 12, Burrows teaches wherein the interrupt handler instruments other instructions in the portion of code associated with the instruction to include the indicator (See column 2, lines 59-65 and column 5, lines 11-13: An indicator is used by the monitor program to identify related code).

Burrows does not teach a second counter.

Holmberg does teach a second counter (See figure 2).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus

accuracy is likely to be increased. In the case of the presence of a second counter, it would be obvious to implement functionality of a first counter with a second counter. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 13, Burrows discloses wherein the portion of code associated with the instruction includes at least one of instructions of a same class of instructions as the instruction and instructions within a same method or routine as the instruction (See column 5, lines 1-8: Instructions are associated with each other).

As per claim 14, Burrows teaches a first metric (See column 5, lines 11-13: The metric given is the number of times an execution flow is encountered).

Burrows does not teach a second metric.

Holmberg does teach wherein the first metric is different from the second metric (See column 4, line 64- column 5, line 2: Examples of different metrics are given).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because in the presence of two counters (see arguments above), it would not make sense to use one metric as then both counters would be making an identical count and thus one would be rendered useless.

As per claim 15, Burrows teaches a computer program product in a computer readable medium for processing instructions comprising:

first instructions for responsive to receiving an instruction at a processor in the data processing system (See column 2, lines 49-59: Instructions are fetched, decoded and executed), determining whether an indicator is associated with the instruction (See column 2, lines 59-65: This is done by checking to see if hint information is null or not);

second instructions for enabling counting, by the processor, of each first event associated with a primary metric of the execution (See column 5, lines 11-13: The metric given is the number of times an execution flow is encountered) of the instruction if the indicator is associated with the instruction (See figure 5 and column 5, lines 11-13: A count field is available for keeping track of the number of times a certain action occurs), wherein the processor autonomically increments the count of the first events associated with the primary metric of the execution of the instruction in a first hardware counter (A counter inherently is able to increment a count when certain operations occurs);

third instructions for determining if the count of the first events associated with the primary metric of the execution of the instruction stored in the first hardware counter satisfies a predetermined relationship with a threshold value (See column 5, lines 14-17: Counts are tracked and used to update hint information);

Burrows does not teach a second counter.

Holmberg does teach a second counter (See figure 2) and fourth instructions for enabling counting, by the processor, of each second event associated with a secondary metric of the execution of a portion of code associated with the instruction (See column 4, line 54-column 5, line 2: A second counter is available for counter a separate event),

wherein the processor autonomically increments the count of the second events associated with the secondary metric of the execution of a portion of code associated with the instruction in a second hardware counter (A counter inherently is able to increment a count when certain operations occurs).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. The performance indicator is another form of providing more data. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 16, Burrow discloses wherein the instruction is received in an instruction cache in the processor (See column 4, lines 3-5: An instruction cache is present).

As per claim 17, Burrows discloses wherein the indicator is stored in a performance instrumentation shadow cache (See figure 5: A hint prediction table is used to store information) and wherein the processor checks the performance instrumentation shadow cache to determine whether the indicator is associated with the instructions (See column 2, lines 59-65: This is done by checking to see if hint information is null or not).

As per claim 18, Burrows discloses wherein the instruction is received in a bundle by an instruction cache in the processor (See column 4, lines 3-5: An instruction cache block implies instructions are received in a bundle) and wherein the indicator comprises at least one spare bit in a field in the bundle (See figure 2: The figure shows an instruction with a hint field).

As per claim 19, Burrows discloses wherein the indicator is a separate instruction (See figures 2 and 5, and column 4 lines 18-25: The presence of a hint field changes how instructions are interpreted and thus can be treated as a separate instruction).

As per claim 20, Burrows discloses wherein the first events includes at least one of an entry into a module (See column 2, lines 53-54: All code is placed into object code modules), an exit from a module (The code must exit the module to be executed), an entry into a subroutine (See column 3, lines 38-40: Subroutines are used), an exit from a subroutine (Code must inherently exit subroutines at some point—either by natural degradation or interrupt), an entry into a function (See column 3, lines 41-42: Procedures are functions), an exit from a function (Code must inherently exit functions at some point—either by natural degradation or interrupt), a start of input/output (See column 3, lines 14-22: Data is read/passed along), a completion of input/output (This must stop before an instruction can be executed properly), and the execution of the instruction (All meaningful instructions inherently executed).

As per claim 21, Burrows discloses wherein the first instructions include:

Instructions for determining, by an instruction cache, whether the indicator is present in a field within the instruction (See column 2, lines 59-65: This is done by checking to see if hint information is null or not).

As per claim 22, Burrows teaches wherein the enabling the counting of first events includes sending a first signal to a performance monitor unit (See column 2, lines 62: A signal is sent to generate a monitor program), wherein the performance monitor unit counts each first event associated with execution of the instruction using the first hardware counter (See figure 5 and column 5, lines 11-13: Counters are used when a monitor program dictates so),

Burrows does not teach a second hardware counter.

Holmberg does teach a second counter (See figure 2) and enabling counting, by the processor, of each second event associated with a secondary metric of the execution of a portion of code associated with the instruction (See column 4, line 54-column 5, line 2: A second counter is available for counter a separate event), wherein the processor autonomically increments the count of the second events associated with the secondary metric of the execution of a portion of code associated with the instruction in a second hardware counter (A counter inherently is able to increment a count when certain operations occurs).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in the art that if a second counter were made available, then the use of the performance monitor unit on the second counter would mirror that of the first counter. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 23, Burrows teaches the use of a counter (See figure 5 and column 5, lines 11-13: A count field is available for keeping track of the number of times a certain action occurs).

Burrows does not teach a second counter and thus no combined counter value.

Holmberg does teach a second counter (See figure 2) and wherein the first hardware counter is a combined counter value hardware counter that stores a combined count from a plurality of other hardware counters (See column 4, line 64- column 5, line 2: One of the preferred modes of counting is a cumulative count).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in

the art that if a second counter were made available, then a cumulative counter would yield more data for better decisions to be made. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 24, Burrows teaches instructions for generating an interrupt (See column 5, lines 11-13: Intercepting an execution involves interrupting it) in response to a determination that the count of the first events meets or excess the threshold value; and

Instructions for sending the interrupt to an interrupt handler of a performance monitoring application (See column 5, lines 11-13: This has to be inherently done with a interception else nothing would happen); wherein the interrupt handler of the performance monitoring application initiates counting of each event associated with a metric of the execution of a portion of code associated with the instruction (See figure 5 and column 5, lines 11-13: Counters are used when a monitor program dictates so).

Burrows does not teach a second counter thus no secondary metric, or counting of a second event.

Holmberg does teach wherein the fourth instruction for enabling counting, by the processor, of each second event associated with a secondary metric (See column 5, lines 35-44: Several metrics are listed) of the execution of a portion of code associated with the instruction includes.

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing

a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. It is also obvious to a person having ordinary skill in the art that if a second counter were made available, the ability to use a secondary metric would be made available with a second counter. It also of note that one of the references cited in Holmberg is Burrows.

As per claim 25, Burrows discloses wherein the interrupt handler instruments other instructions in the portion of code associated with the instruction to include the indicator (See column 2, lines 59-65 and column 5, lines 11-13: An indicator is used by the monitor program to identify related code).

As per claim 26, Burrows teaches wherein the interrupt handler instruments other instructions in the portion of code associated with the instruction to include the indicator (See column 2, lines 59-65 and column 5, lines 11-13: An indicator is used by the monitor program to identify related code).

Burrows does not teach a second counter.

Holmberg does teach a second counter (See figure 2).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus

accuracy is likely to be increased. In the case of the presence of a second counter, it would be obvious to implement functionality of a first counter with a second counter. It is also of note that one of the references cited in Holmberg is Burrows.

As per claim 27, Burrows discloses wherein the portion of code associated with the instruction includes at least one of instructions of a same class of instructions as the instruction and instructions within a same method or routine as the instruction (See column 5, lines 1-8: Instructions are associated with each other).

As per claim 28, Burrows teaches a first metric (See column 5, lines 11-13: The metric given is the number of times an execution flow is encountered).

Burrows does not teach a second metric.

Holmberg does teach wherein the first metric is different from the second metric (See column 4, line 64- column 5, line 2: Examples of different metrics are given).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because in the presence of two counters (see arguments above), it would not make sense to use one metric as then both counters would be making an identical count and thus one would be rendered useless.

As per claim 29, Burrows teaches an apparatus for processing instructions, the method comprising:

means for determining whether an indicator is associated with the instruction in response to receiving an instruction at a processor in the data processing system (See column 2, lines 59-65: This is done by checking to see if hint information is null or not);

means for enabling counting, by the processor, of each first event associated with a primary metric of the execution (See column 5, lines 11-13: The metric given is the number of times an execution flow is encountered) of the instruction if the indicator is associated with the instruction (See figure 5 and column 5, lines 11-13: A count field is available for keeping track of the number of times a certain action occurs), wherein the processor autonomically increments the count of the first events associated with the primary metric of the execution of the instruction in a first hardware counter (A counter inherently is able to increment a count when certain operations occurs);

means for determining if the count of the first events associated with the primary metric of the execution of the instruction stored in the first hardware counter satisfies a predetermined relationship with a threshold value (See column 5, lines 14-17: Counts are tracked and used to update hint information);

Burrows does not teach a second counter.

Holmberg does teach a second counter (See figure 2) and means for enabling counting, by the processor, of each second event associated with a secondary metric of the execution of a portion of code associated with the instruction (See column 4, line 54-column 5, line 2: A second counter is available for counter a separate event), wherein the processor autonomically increments the count of the second events associated with the secondary metric of the execution of a portion of code associated with the

instruction in a second hardware counter (A counter inherently is able to increment a count when certain operations occurs).

It would been obvious to a person having ordinary skill in the art at the time the invention was made to modify the teachings of Burrows with Holmberg because utilizing a second counter would allow greater ability to track data and thus better predictions can be made. More data means more informed decisions can be made and thus accuracy is likely to be increased. The performance indicator is another form of providing more data. It is also of note that one of the references cited in Holmberg is Burrows.

Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to show further art related to a method and apparatus for autonomically initiating measurement of secondary metrics based on hardware counter values for primary metrics:

U.S. Patent # 5,938,760 to Levine et al shows a system and method for performance monitoring of instructions in a re-order buffer.

U.S. Patent # 6,189,072 B1 to Levine et al shows performance monitoring of cache misses and instruction completed for instruction parallelism analysis.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vincent Lai whose telephone number is (571) 272-6749. The examiner can normally be reached on M-F 8:00-5:30 (First BiWeek Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fritz M. Fleming can be reached on (571) 272-4145. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Vincent Lai
Examiner
Art Unit 2181

vl
April 25, 2006

Supervisory PRIMARY EXAMINER 5/1/2006
FRITZ FLEMING
GROUP 2100
AU 2181